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ABSTRACT

A study surveyed 276 residents of Indianapolis, Indiana to determine how the people might be changing media use and spending habits in a time of growing interest in video cassette recorders (VCRs), backyard satellite dishes, pay-TV, and personal computers. Questions were designed to determine the degree to which people would buy into the new technologies without dropping interest or money spent on the old ones, and whether people who bought a VCR, for example, would drop their cable subscription, or their Home Box Office (HBO) or Showtime services. Results found little impact of the new technologies on the expenditure of time or money. No relationship between the time and money spent with media was found, except for the people who reported having the lowest income. Low income respondents spent the largest percent of their income on mass media and also spent the largest amount of time with the media. Penetration of the new technologies into this market was found to be similar to national statistics--almost one-third of the respondents owned VCRs and about 17% owned computers. (HOD)

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Time and Money Spent on the Mass Media in an Age of New Communication Technologies: A Market Study

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The video cassette recorder, backyard satellite dish, pay-TV, and personal computer are part of everyday options of American media consumers. This market study of respondents in a metropolitan area examines the time and money spent on the media and the newer communication technologies. Where John P. Robinson (1977, 1981) has examined the use of time spent with the mass media, and Maxwell McCombs (1972 and 1981) researched the money spent on mass media, this survey examined both variables. Little impact of the new technologies on the expenditure of time or money was found. And no relationship between the time and money spent with media was found, except for the people who reported having the lowest income. Low income respondents spent the largest percent of their income on mass media and also spent the largest amount of time with the media.

Penetration of the new technologies into this Midwest market were found to be similar to national statistics. Almost one-third of the respondents owned VCRs and about 17 percent owned computers.

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The new communication technologies that have proliferated in recent years have moved into American households in large numbers. Most popular of these has been the video cassette recorder, owned by an estimated 28 percent of all U.S. households. (Broadcasting, Jan. 27, 1986, p. 10) Personal computers are in about 12 percent of U.S. homes. (Hillkirk, 1986, p. E1) And each month at least 40,000 satellite dishes are sold. (Channels, p. 54) Although prices have dropped considerably from the first availability of all these technologies, consumers are still likely to pay a minimum of several hundred dollars for any one of these items.

The impact of the new technologies on the traditional mass media has yet to be assessed. Several studies of the expenditure of time and money on mass media have been conducted in the past several years, but none of these has accounted for the introduction of these new communication technologies, and none has simultaneously examined time and money spent on the mass media.

Two studies that have considered monetary expenditures on mass media found that a "constancy principle" applies—i.e., that people spend a relatively fixed percentage of their incomes on mass media over time. (McCombs, 1972 and McCombs and Eyal, 1981) Maxwell McCombs, who first examined this phenonmenon over a 40-year period, from 1929 to 1968, found that "what Americans spend on mass communication has not increased with the advent and spread of new media such as radio and television. The money to create two ubiquitous broadcasting systems, first radio, later television, seems to have come more from changing media habits and general economic growth than from any fundamental shifts in consumer habits—such as allocating mass media a larger share of personal income." (McCombs,

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1972, pp. 18-19) An update on the study, extending the period of examination to 1977, upheld the findings of the earlier work. (McCombs and Eyal, 1981) During the 40-year period, expenditures on the mass media were 3.14% of total consumer expenditures, and about 2.55% of individual consumer income.

In 1973, Richard Maisel published an article in which he developed an opposing thesis, that instead of holding their own over time, the mass media have actually been declining. Developing a three-stage theory of social change, Maisel postulated that society is experiencing the third, post-industrial stage, in which the rapid growth of mass media is not sustained, as it was in earlier periods, but rather shifts to a growth of specialized media. (Maisel, p. 161) Maisel, therefore, predicted that he would find specialized media growth in a study of the economic support for the mass media and in the volume of communication. Maisel found that the growth rate of specialized media increased when compared to that of the mass media. The mass media, he found, were shrinking in size, compared to the whole economy. Maisel included in his category of specialized media, local radio and television stations, technical books, bimonthly and quarterly periodicals, and newspapers produced outside central cities. Since McCombs never broke down mass media in this way, it is difficult to make comparisons between the findings of the two studies. In fact, although the method and data analysis of the two studies are different, the findings may not be at all contradictory since specialized media and mass media were combined in McCombs' studies.

Gaddy and Deith, in a critique of both the constancy hypothesis and the mass media decline theory, argue that the mass media may be functionally equivalent to a variety of other activities, both socially

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and technologically. They therefore call for a measurement of an individual's time as well as money spent on the mass media.

> So even if the proportion of money spent on the mass media has remained constant, the proportion of human resources may not have. True constancy could only occur in the presence of a dynamic equilibrium between growth in productivity and the displacement of functionally similar activities. Careful examination of the notion of expenditure further shows that condition could only be validly determined when the human investment of time in the mass media is simultaneously considered along with expenditure of money on them. (1985, pp. 20,21)

Robinson (1977, 1981) has conducted longitudinal studies with national samples on Americans' use of leisure time, including time spent with the mass media. In the 10-year period between Robinson's two published studies (from data collected in 1965 and 1975), respondents reported an increase in the total amount of leisure time--from 296 minutes to 330 minutes per day. Most of that increase was accounted for in the increased time spent with television, while time spent working, listening to the radio, reading the newspaper and visiting all declined. Preliminary reports from a 1985 replication by Robinson indicate that leisure time increased again in the last 10 years, to take up a full 24% of Americans' days. (Science 86, p. 59) In 1965, that percentage was 20.6; by 1975 it had increased to 22.9. (Robinson, 1981, p. 125)

United Media Enterprises, in a 1982 national survey of the leisure time activities of Americans, examined sub-groups in the population. The researchers replicated many of the same questions of the Robinson studies. They hypothesized that a person's level of responsibility will be a major factor in determining how much leisure time he or she has and how that leisure time will be used. The amount of leisure time available varied from a low of 23 hours per week for dual-career parents to a high of 43 hours for senior citizens. Similarly, the percentage of senior citizens

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who reported watching television or reading newspapers daily was the highest of all the groups (81% and 87% respectively), while daily television viewing was lowest for single parents (62%). Low newspaper reading was also related to responsibility level, but the group reporting the lowest daily newspaper reading was teenagers (49%).

A few other studies have examined the use of one new technology, cable television, in relation to time spent with traditional media. Three studies found that increased time spent with cable was associated with increased time spent with television (Becker, et al., 1983; Webster, 1983; and Grotta and Newsom, 1982). In the Webster and Grotta and Newsom studies, the authors found some evidence that time spent with cable was somewhat taken away from time spent with local television, while Becker, et al., found some decrease in time spent with radio for news and weather information. However, all three studies supported Becker's finding that "cable has been added onto the pattern of normal news media use rather than replaced it."

Finally, studies by Levy (1981) and Levy and Fink (1984) suggest that the video cassette recorder is also a complementary medium to the television. In early adopters of VCRs, Levy found that owners used the recorder primarily for time shifting of television programs rather than the viewing of rented or purchased films. There is reason to believe that viewing of rented films is a much more popular use of the technology today, however. An indication of that shift is found in the increase in the number of video rental shops. In 1985, there were 24,000 video stores, double the number of the previous year. Nielsen estimates that about two-thirds of VCR owners are "active renters." (Channels, 1986, p. 76)

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Research Questions

The main question for research in this study was: What is the nature of the time and money spent on the mass media in an era of proliferating communication technologies? Where the earlier studies have focused on either time or money expended, or on the use of one new technology and its relation to existing technologies, we were interested in examining all of these factors simultaneously. Although we did not formulate specific hypotheses, we had some expectation that the high price of computers, VCRs, satellite dishes and software would cause consumers to break with the constancy principle and allocate a larger percentage of their incomes to media.

On the time dimension, we reasoned that in spite of Robinson's finding that leisure time has been increasing over time, there is an upper limit to this time--a point at which a person can no longer take time from sleep, work and other family responsibilities to spend with the mass media or other activities.

Further, we were interested in the degree to which people would buy into the new technologies without dropping interest or money spent on the old ones. The VCR and satellite dish are transmission devices, making it possible to receive program content not before possible, and both of these technologies overlap with existing media--cable, pay television and movies. We wanted to know whether people who bought a VCR, for example, would drop their cable subscription, or their HBO or Showtime services. To some extent, the movie channels are not only a functional equivalent, but a duplication of content available through a $2 rental tape played on

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a VCR. And the films appearing at the corner video store precede their showing on a movie channel by at least two months. Do VCR owners recognize this duplication and drop the movie channels or is user inertia the stronger influence?

To answer the research questions on a national level was impossible. Neither the resources nor the time was available for such a study. And even if a national study were conducted, it would be best to first test it out on a smaller scale and then refine the survey instrument. Our purpose, therefore, was to conduct an exploratory study in a single market to determine how best to expand future research to a national level.

Method

As part of a class project in a graduate seminar in new communications technologies, students conducted telephone surveys of 276 residents of the Indianapolis area. Numbers were selected at random from the city's telephone directory and then the last digit was systematically altered to create a new list of numbers that maintained the correct proportion of exchanges while generating numbers that included ones that were unlisted. Telephone numbers of businesses, computer data signals and answering services were dropped from the sample. Since the greater Indianapolis telephone directory includes all residents of Marion County, Indiana, both urban and rural residents were included in the sample.

Following a pre-test of the questionnaire, the interviewers were able to obtain a 55% response rate.[1] Although the response was lower than desired, we had reason to believe that the respondents were not unlike the population of Indianapolis. Responses to a survey of 937 residents in the

Indianapolis ADI (Area of Dominant Influence) by Simmons-Scarborough Syndicated Research Associates conducted from November 1984 to January 1985, were similar to responses to particular questions in this study. The similarities will be discussed in the findings section of this paper.

Adult members of the households responded to 149 questions related to expenditures of time and money on specific mass media and other communication technologies, attitudes concerning uses and gratifications of mass media and demographic information. The average interview lasted about 25 minutes.

Although Indianapolis, a city of about 750,000 people, may not be considered representative of the U.S. population, this study was conducted as a market study. We wanted to know how the residents of this Midwestern community might be changing media use and spending habits in a time of growing interest in new communication technologies. Since we had some national figures available, from McCombs and Robinson studies, we were able to make comparisons between this market and the national situation and speculate about possible changes in other urban areas. Since Indianapolis is a city with three cable companies, and since there is a sizable rural population that might have interest in purchasing satellite dishes, it seemed a reasonable site for such a study.

Findings

Representativeness of Sample:

Since the size of the sample was relatively small, and the response rate less than desired, findings were tested for representativeness by comparing responses on certain variables to national statistics and to the

Simmons-Scarborough findings cited above. Nationally, cable penetration stood at 46% at the end of 1985 (Broadcasting, Dec. 30, 1985, p. 72), while about 60% of homes subscribe in territories where cable is available. (Traub, p. 67) About 55% of homes with cable receive one of the pay services, the average home subscribing to about 1.65 services, down from 1.9 services from a year ago. (Traub, p. 68) Simmons-Scarborough data on Indianapolis show that 45% of the respondents to its survey subscribed to cable at the beginning of 1985. (1985 Newspaper Ratings Study) Video cassette recorder penetration was estimated at 28% of all television homes at the end of 1985. (Broadcasting, Jan. 27, 1986, p. 10)

The respondents to this survey in Indianapolis reflect a similar pattern of subscribing to cable services and owning VCRs. Of the television homes in Indianapolis, 52.6% subscribe to cable, while 59.6% of those who say they live in neighborhoods where cable is available subscribe. In cabled homes, 67.8% subscribe to at least one pay service, while 12.5% of respondents say they have dropped a service in the past year. HBO is the most popular service, as it is nationally. Indianapolis respondents with pay TV subscribe to an average of 1.83 services.

Video cassette recorder ownership was slightly higher in Indianapolis than it is nationally--31.5% vs 28%.

According to a USA Today national survey of about 2,500 adults, computer ownership was 12% in mid-1985, and penetration was expected to climb 2-3% by the end of the year, according to Andy Bose, analyst at Link Resources Inc. (Hillkirk, Sept. 23, 1985, p. 1E) The USA Today study found that 39% of those surveyed say they have used computers, either at work, at school or in someone's home. Simmons-Scarborough data for

Indianapolis show that 14.6% of residents owned computers at the beginning of 1985. (1985 Newspaper Ratings Survey) More than half (55.4%) of our respondents had used a computer at work, school or in someone's home, while 17.4% report owning a computer.

Although the penetration figures of cable, VCR, pay-TV and computer for this study do not match up exactly with the other Indianapolis survey or national-level studies, the numbers are quite close. And some of the difference in percentages can be accounted for by the time when the studies were conducted. For example, video cassette recorder purchases have increased tremendously over the last two years, the number of households with VCRs doubling in the last 18 months alone. (Traub, p. 66). And sales are difficult to accurately monitor, causing conflicting reports on national VCR penetration.

The one area of technology acquisition that was under-represented in this survey was the ownership of satellite dishes. Although there are a reported 1.5 million dishes in use nationally (Broadcasting, March 10, 1986, p. 35) and the Midwest is one of the areas with the highest penetration, our survey produced only one satellite dish owner. Since we did not ask questions about the rural-urban residence of our respondents, we have no way of knowing whether rural residents were under-represented. From our own observation upon driving through the region, we know that dishes are quite popular, but we had no independent source of information on actual penetration in Indianapolis. It is also possible that respondents were reluctant to answer questions about dishes since the broadcast and cable networks are still trying to get legislation passed to curtail use of pay services by dish owners and have just begun to scramble signals in an attempt to get dish owners to pay for services they are now receiving free.

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Media Expenditures:

Though the study made no hypothesis concerning media expenditures, it seems logical that there would be increases in spending on media technologies, both in actual dollars and in percent of personal income if respondents were buying VCRs, computers, satellite dishes and software. McCombs' studies were calculated on data collected prior to 1977--data that certainly didn't include computers and VCRs and didn't reflect much purchase of pay-TV service. Also, cable subscriptions have more than tripled since that time (Traub, p. 66).

Before examining total media expenditures, it is important to examine the expenditures for individual media and technologies. Respondents to this survey paid $359.28 (mean cost) for their last television set. Almost a third (31.2%) of the respondents purchased a TV in the last year and an additional 17.8% bought one in the last two years. We speculated that the purchase of a VCR or a computer prompted the puchase of an additional television set (rather than the purchase of a replacement set). Respondents owned an average (mean) of 2.2 sets.

Video cassette recorders were owned by 31.5% of the respondents, and more than half (52.9%) of those were purchased within the last year. The mean cost of the VCR was $481.50. Expenditures for films on cassettes and for blank cassettes are more difficult to calculate. We asked how many films were included in the respondents' libraries. VCR owners reported owning a mean of 9.32 films. Even if we could assume a standard price per film, we could not assume that each film had actually been purchased, given the degree of both legal and illegal copying of films. VCR owners

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also reported owning a mean of 6.56 additional tapes with programs.[11] We included tape purchase only as a variable cost, since we asked how many tapes VCR owners bought per month.[2]

The 48 computer owners in our survey paid a mean of $897.34 for their computers. The median cost was lower--$400.50, since many of the respondents reported ownership of low cost computers. Only four respondents owned IBM computers, six owned Apples and one reported owning another more expensive model. More popular were the inexpensive models--Commodore (16), Atari (4), and Radio Shack (7).

Calculating cost for software was as difficult as it was for video tapes, since many computer owners copy programs, rather than pay the full purchase price. A mean of $171.03 had reportedly been spent on software by computer owners. Although software is more like a variable cost, it may also be a fixed cost, if a computer owner buys only three programs with the computer and never purchases any others, for example. We chose to calculate this as a variable cost, however, since owners are more likely to continue to purchase software over time.

Other variable media expenditures included basic cable, pay TV, blank tape cost, film cassette rentals, video club membership, cinema admissions, newspaper subscriptions, magazine subscriptions and books. Table 1 provides the breakdown of both variable and fixed annual media costs. Cost of subscriptions, cable services, admission prices and film rentals were determined by checking with companies providing those services in the Indianapolis market and using a mean figure for each. In the survey, we asked the amount paid for video club membership, software and books.

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The total mean variable cost was $511.11, while the total mean fixed cost was $195.29. The grand total mean media cost was $706.40. Although the last figures provided by McCombs and Eyal only covered through 1977, McCombs has since been working to update his studies and reports that the mean actual dollar media expenditure figure for 1984 (the last year for which data are available from the U.S. Dept. of Commerce) was $711.07.[3] In other words, our 1985 media costs for Indianapolis were virtually identical to the 1984 national-level data.

Several things about these two figures need to be explained before drawing any conclusions. First, McCombs reports that computer expenditures are not included in the mass media category in the government figures, and it has yet to be determined whether VCRs are included in the government calculations. Cable and pay-TV are included, however. In addition, the Commerce Department figures include some non-media expenditures not covered in our survey--sheet music, maps, radio and TV repairs, admissions to recreational activities other than cinema, records and musical instrument cost.

Another important qualification concerning the level of analysis needs to be noted. The $711.07 figure represents national data, while the Indianapolis figure is based on only one geographic region--a region in which the cost of living is generally lower than many other urban areas of similar size. To make an accurate comparison here, it would be necessary to look at Indianapolis data over time, or to weight the Indianapolis figure accordingly.

Finally, it is important to look at the expenditures as they relate to respondent income. In the earlier study by McCombs, he provides the percentage of personal income spent on the mass media from 1929 to 1968.

That figure ranges from a low of 1.93% in 1944 to a high of 3.32% in 1930. The mean percentage of income spent on the mass media over the 40-year period was 2.55. (McCombs, 1972, pp. 74-75) In spite of the advent of television, and later color television--both expensive technologies at the time of popular adoption--the percentages do not peak in the early 1950s or the late 1960s, except for the one high percentage point of 2.83 in 1950. Beginning in 1951, the percentage levels off to about 2.5 for the years since that time.

The percentage of reported personal income spent on mass media in Indianapolis in this survey was 3.11, about .5% higher than the mean national figure. Although this would seem to support the notion that costly new technologies mean consumers spend a higher portion of their incomes on the mass media, all of the cautions listed above need to be remembered. Also, the higher percentage figure may not reflect any real difference, once more information about the Indianapolis market and the national figures is collected.

As might be expected, the higher the income of the respondent, the greater the number of dollars reported spent on the mass media ($r=22; p=.0004$). That doesn't mean that people with low incomes aren't spending money on media, however. In fact, respondents with low income spent a higher percentage of the income on media than respondents with high incomes spent. ($r=-.38; p=.0000$).

Expenditures on some individual media also show some interesting relationships. Indianapolis respondents who own VCRs or computers are no more likely than non-owners to drop a pay-TV service or a newspaper subscription. They are somewhat more likely, however, to drop at least one magazine subscription. Since pay-TV has been described as a duplicate

service to the use of the VCR to view films, this finding is somewhat surprising.

Perhaps equally surprising is the finding that VCR owners go to the movies more often than non-owners (Cramer's V=.28; p=.02), even though 37.9% of VCR owners report that they go to the movies less often now than they did before they purchased the VCR.

Expenditures of Time:

Gaddy and Deith have contended that mass media expenditures can only be properly understood if investments of time as well as money are taken into account. "So even if the proportion of money spent on mass media has remained constant, the proportion of human resources may not have." (p. 20)

The base line for comparison in time spent with the mass media was primarily taken from the Robinson studies. (1977 and 1981) Again, it is difficult to make exact comparisons, since the methods of data collection differed somewhat. In fact, in Robinson's own studies, the sample groups were more narrowly selected in one study than in another.

Robinson's diary method has some advantages over the self-report method in such a study. First, the respondent is able to record the amount of time spent on an activity at the time it is being done--allowing for a more accurate assessment. He or she is also able to record times when two activities are being performed simultaneously--such as watching TV and reading the newspaper. The method is not free from error, however, since respondents can forget to write down activities at the appropriate time and need to rely on recall, much as they would when the self-report method

is used. In spite of the mixing of methods in Robinson's work and our own, some comparisons can be made. And Robinson reports some media use figures from both diary and survey data.

If Robinson's finding that the increased amount of leisure time is spent with television is true, the introduction of the VCR into the home and the increased number of subscribers to basic cable (Robinson reports that 20% of his 1975 respondents were subscribers) and pay-TV services should mean that respondents in 1985 will report spending more time with television. And they did. Respondents to this survey said they spend an average of 3.1 hours a day watching television, and that they watched an average of 2.7 hours yesterday. This is up from the 2.2 hours a day cited in the 1975 Robinson survey. The national survey conducted in 1982 by United Media Enterprises, which also used a diary method, found that respondents spent 2.8 hours a day watching television. (See Table 2 for comparisons with other studies)

It was assumed that people would have difficulty reporting the number of hours spent with cable, pay-TV and rented films shown on the VCR separately. Therefore, we asked the general question concerning the number of hours respondents watched TV. We also asked for the number of rented films watched per week. Video cassette recorder owners reported watching .95 films per week. Calculated at two hours per film, VCR owners watched about 1.9 hours a week or .27 hours a day. (See Table 3 for use of individual media) That amount might affect the total number of television viewing hours a day if all respondents had a VCR, but since only 83 people owned VCRs, the impact on the total number of viewing hours was probably negligible.

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One way of determining whether the people who subscribe to cable, pay-TV and who own VCRs are using these technologies to add to traditional television viewing time is to see if they report watching more television than people who do not use them. Only people who subscribe to cable report watching more television than non-cable subscribers ($r=.13$; $p=.01$). No difference in television viewing habits of computer owners or VCR owners and non-owners was found. In Robinson's report on 10-year changes in media use, he found newspaper reading and radio listening had dropped over time. (See Table 2) The Indianapolis residents reported spending more than one-half hour a day reading the paper, more than double the amount of reading reported by Robinson. And radio listening was almost negligible in his study. Our respondents report spending 2.97 hours a day with the radio. Much of that listening is secondary activity, however. Respondents reported listening to the radio while driving to work, and some people said the radio was on all day at their place of work.

Measurement of book reading and magazine reading was different in the several studies. Our respondents reported reading .23 weekly magazines and 1.90 monthly magazines regularly. They also read 3.3 books last month. But no books at all were read by 42.4% of the respondents and no magazines were read by 43.5% of them.

Computer use was so minimal as not to be a factor. Computer owners reported spending a mean of 2.44 hours a day with their computers. But as is the case for VCR viewing, since such a small number of the respondents owned computers (48), that time was almost negligible when averaged over the total sample (.09 hours per day). Computers will have to penetrate a much larger segment of the population before they can be said to pose any threat to traditional mass media.

Media Use Factors

For the purposes of comparison with previous studies of the uses of leisure time, we computed a leisure time variable by adding the reported number of hours spent in work (that included housework and child care) to the reported number of hours spent sleeping and subtracted it from 24 hours. Although this was a somewhat crude measure of leisure time, it could then be compared with that of previous studies. (See Table 2) If the hours spent sleeping and the total hours spent in various forms of work described in Robinson's studies are added together and subtracted from 24, the result is close to the total hours of leisure time found in our study. Our total number of hours is up slightly from the 1975 study (8.77 hours per day vs. 8.58 hours). This would tend to indicate that there was a slight increase in the amount of leisure time available over the 10-year period.

A total media use index was computed by adding the number of daily hours spent watching television, reading the newspaper, watching films on video, using the computer and going to the movies. Radio and record listening were not included, since these were more likely to be secondary activities. A weak positive relationship ($r=.21$, $p=.0003$) was found between media use and amount of leisure time, while Robinson found a stronger positive relation between television viewing time and free time (.43).

We found no relationship between sex or age and media use, and a negative relationship between income and both media use and television viewing (-.13; $p=.0$). Education was also negatively related to both media

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use and television viewing. (r=-.23; p=.0001) And occupation was related to media use, with housepersons and students using more media than unemployed,retired, professional or blue collar workers. (Cramer's V=.20; p=.0001) Professional workers reported the least amount of viewing.

Robinson's findings showed that people over the age of 50, and housewives increased television use over time, while there were smaller increases in viewing time among less educated and low income groups.

Care must be taken in interpreting our findings, but it is important to note that the media use correlations for income, education and media use support the findings about expenditures of money. If low income respondents are spending a larger percent of their income on mass media, they might be expected to also spend more time with the media. They must value the mass media, if they are willing to spend a higher portion of their income on televisions, VCRs, etc., than are higher income groups.

Media Time and Money Expenditures:

We began this research asking about the total impact of time and money spent on the mass media and the new communication technologies. But our findings show that there is no relationship between the total time reportedly spent on the media and the reported expenditure of money on those media. When we controlled for income and for percent of income spent on the mass media, there was still no relationship between total dollars and time spent on the media.

Since television use was the focus of the Robinson studies, and since television use accounts for use of cable, pay TV and the VCR, we tested for a possible relationship between reported use of television and total

dollars spent on mass media, and still found no relationship. When controlling for income and for percent of income spent on the media, there was still no relationship, except for the people who reported spending the highest percentage of their income on the mass media. This group of respondents spent more time with television, but fewer total dollars on the mass media ($r=-.21$; $p=.03$).

We hesitate to say that Gaddy and Deith are wrong--that it isn't important to simultaneously account for time and money spent on the mass media. We can only say that for this group of respondents in the Indianapolis market, and perhaps for the entire Indianapolis area, given a representative sample, no relationship between time and money spent was demonstrated, except for those people with the lowest incomes. Further, the current level of penetration of new media technologies had no overall significant impact on the use of time or money with the total group of respondents. Again, low income respondents were the exception.

Conclusions

Researching the impact of communication technologies on consumer expenditures of time and money is difficult. This study was only a beginning in the assessment of the impact of these technologies in a single market. The respondents to this survey have not spent much money on the technologies--in fact, their total reported expenditures on the mass media were virtually the same as 1984 national figures calculated by McCombs. And since there was low inflation in 1985, and the cost of living in Indianapolis is lower than in other similar metropolitan areas, there is even more reason to accept these figures as comparable. There

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was some increase in the portion of the respondents' leisure time spent with the communication media, but no reason to believe that the addition of pay TV, VCRs and computers had any significant effect on the total amount of time spent with the mass media.

When people write about the promise of new technologies, they usually take one of two positions. The first of these is the cockeyed optimist approach, in which the seer predicts that technology will bring health and wealth to all people, and improve society by bringing democratic opportunity and equality to everyone. The second of these is the pessimistic view that technology will make not improve anyone's life circumstance. If anything, the new tools will increase the gap between the rich and poor, as the technologies will not be equitably distributed in society.

So do the results of this survey tell us that the second technological scenario is the more accurate--that the new communication technologies make no real difference in our lives? We think we don't yet have an answer to that question. But it appears that communication technologies do make a difference--at least for people with lower incomes. When it comes to using the media for entertainment, at least, it seems that the poor are making greater use of the new technologies, spending more time with them and a larger portion of their incomes on them. That may not be true for the use of media for educational purposes. The computer owners and the users of on-line information services were primarily found in the upper income categories. It may also be true that rich people have a wider range of entertainment options and that poor people buy more pay-tv subscriptions and more VCRs because cinema and other admission prices are out of reach.

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This research also raises some important questions along with the limited findings. The following three questions need to be addressed in future research with a national or international focus:

What is the best way to conduct research into the uses of communication technologies? Self-report of media use is always problematic. It is especially so where the television receiver is the transmission device for satellite delivered, cable-delivered or videotaped material. Even with clear recall, it is difficult for respondents to distinguish between time spent with cable, pay-TV and the VCR.

Respondents completing diaries are as apt to have difficulty remembering to note when they watched cable, network TV or something else. Nielson-type ratings are not the answer, since they only measure the number of hours the television or cable is on.

Until some better method can be devised, the diary seems to be less error-prone than the other two methods. But periodic checks for accuracy should accompany this method. Of course, this is also the most expensive of the three, and the hardest for which to get agreeable participants.

What is the long-term impact of any new communication technology on existing media use patterns? This study can't answer that question because it looks at one market at one point in time. And Robinson's over time studies, though national in scope, don't do much better. Needed are more longitudinal studies that gather more precise data on such things as film rentals and number of programs watched on pay-TV, time spent on line with the computer, etc.. The neighborhood video shops should also be included in such research. In-person interviews with renters of videotapes could reveal more accurate information on frequency of use, choice of material, etc.

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More variables need to be examined in longitudinal studies. Our research indicates that social class may be a crucial variable in determining the expenditure of time and money. And certainly education is another important variable, since several studies have found that less educated people spend more time with television--and we would add VCRs and pay TV. A broader range of leisure time activities needs to be included in future studies. If poor people spend more time and money on VCRs and cassettes, what activities are they giving up for the new one? And if rich people have more leisure time options, which ones are they exercising?

Finally, what is the long-term relationship between media use and money spent on the media? This study was an attempt to assess that on a small scale. Though we found a relationship only for those people with lower incomes, we would like to see that tested at a national level, with more precise data collection methods, to determine whether our findings in the Indianapolis market are accurate.

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Table 1

Media Costs of Indianapolis Residents

(n=276)

	Mean Annual Cost
Variable Costs	
Newspaper Subscriptions	$84.38
Books	84.46
Magazine Subscriptions	50.50
Video Club Membership	3.31
Cable Subscription	63.45
Pay-TV Subscriptions	72.83
Taped Film Rentals	51.52
Blank Videotape Purchase	45.24
Software	19.00
Cinema Admissions	36.43
Total Variable Cost	$511.12
Fixed Costs*	
Television Receivers	80.25
Video Cassette Recorders	62.26
Computers	52.78
Total Fixed Costs	$195.29
Total Media Costs for 1985	$706.41

*Fixed Costs were based on 1985 reported expenditures.

Table 2

Time Expenditures for Media, Work, Sleep and Leisure
in Studies Over a 20-Year Period

	Mean Number of Hours Per Day			
	1965*	1975*	1982**	1985***
Television Viewing	1.5 (.33)[1]	2.2 (.47)	2.8	(3.12)
Radio Listening	.06	.03		(2.97)
Newspaper Reading	.35 (.55)	.23 (.43)		(.56)
Record/Tape Listening				(.41)
Working	8.62	7.55		(8.10)
Sleeping	7.62	7.87		(7.11)
Leisure Time Available	7.76	8.58	(4.57)[2]	(8.77)

* Studies conducted by John Robinson. See bibliography for complete cite.
**Study conducted by The United Media Enterprises. See bibliography for complete cite.
***Survey of Indianapolis residents.

[1]Figures in parentheses derived from a self-report on amount of time spent in the activity. Figures without parentheses were taken from diary reported information. Robinson collected data through both methods, as he reports in his 1981 article. See bibliography for complete cite.

[2]This figure was based on a self report. However it was not calculated as the other leisure time figures were (by subtracting the total number of hours spent in sleep and work from 24 hours). For this study, the interviewer asked how many hours the respondent had for leisure time activities on each day of the week.

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Table 3

Media Use of Indianapolis Residents
(n=276)

	Mean Hours
Watched TV Yesterday	2.70
Television Viewing	3.12
Radio Listening	2.97
Record/Tape Listening	.41
Newspaper Reading	.56
Computer Use	.09
VCR Use	.06
	Mean Number Read
Magazines	
Weekly	.23
Monthly	1.90
Books (per month)	3.30
Newspapers (reported subscriptions)	.91
	Mean Monthly Attendance
Cinema	.75

Footnotes

[1]An study of refusal rates to surveys over a 27-year period indicates that refusals have substantially increased over time and that urban refusal rates were 21 percentage points down during the period, while small-town refusal rates were down by only 8%. Since Indianapolis is a metropolitan area, the low response rate was not unexpected. See Charlotte G. Steeh, "Trends in Nonresponse Rates, 1952-79," Public Opinion Quarterly 45 (1981), pp. 40-57.

[2]Fixed costs consisted of purchases that were considered one-time purchases, or purchases that would be made infrequently, such as a television receiver or a computer. Variable costs, on the other hand, were more periodic, such as the monthly cable or pay-TV service, the annual video club membership cost or the monthly newspaper subscription.

[3]This information was obtained from Maxwell McCombs in a conversation on March 15, 1986.

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